AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A system for monitoring an EUV mask fabrication process comprising:

an EUV mask fabrication system comprising a photoresist processor for forming, irradiating and developing a photoresist layer over a translucent substrate having one or more layers of reflective material formed therebetween, the photoresist being the upper most layer, and one or more reflective material etchants for etching the reflective material layers;

a mask inspection system operatively connected to the mask fabrication system ~~for examining~~ that examines the layers as they are being etched and developed by the mask fabrication system and generating data related thereto; and

an EUV mask fabrication control system coupled to the mask inspection system ~~for receiving~~ that receives data from the inspection system in order to regulate the mask fabrication system to facilitate obtaining desired critical dimensions on a newly fabricated mask.

2. (original) The system of claim 1, further comprising one or more mask fabrication components connected to the control system such that at least one of data, information, and instruction is received from the control system in order to effectuate an improvement in the mask fabrication components to obtain desired critical dimensions on a fabricated mask, wherein the fabrication components correspond to at least one of layer formation, deposition rate, pressure, temperature, time, flow rate, and plasma type.

3. (original) The system of claim 1, wherein the mask inspection system provides feedback data to the control system related to one or more

images patterned and developed on the layers to facilitate mask fabrication.

4. (original) The system of claim 1, wherein the mask inspection system provides feed-forward data related to data generated by the mask inspection system in order to control the EUV mask fabrication process for future EUV masks.

5. (original) The system of claim 1, wherein the mask inspection system comprises an optical measurement system, the optical measurement system comprising a scatterometer having multiple gratings at fixed and variable pitches.

6. (original) The system of claim 1, further comprises a processor operatively connected to the mask inspection system and the control system for analyzing data gathered by the mask inspection system and for communicating with the control system.

7. (original) The system of claim 1, wherein the one or more layers comprises chrome, titanium nitride, molybdenum, silicon, silicon nitride, and combinations thereof.

8. (original) The system of claim 1, wherein the generated data relates to any one of layer thickness, feature depth, feature height, feature width, feature placement, and pitch.

9. (Currently amended) A system for monitoring *in-situ* an EUV mask fabrication process comprising:

an EUV mask fabrication system comprising:

a photoresist processor for forming, irradiating and developing a photoresist layer over a translucent silicon substrate having one or more layers of reflective material formed therebetween, the photoresist being the upper most layer;

one or more reflective material etchants ~~for etching~~ that etch the reflective material layers; and

one or more fabrication components for manufacturing the mask to be used in an EUV photolithography process, the fabrication components corresponding to at least one of layer formation, deposition rate, pressure, temperature, time, flow rate, and plasma type;

a mask inspection system operatively connected to the mask fabrication system ~~for examining~~ that examine the layers as they are being patterned and developed by the mask fabrication system; and

a control system coupled to the mask inspection system ~~for receiving~~ that receives data from the inspection system in order to regulate the mask fabrication system to facilitate obtaining desired critical dimensions,

wherein the control system is operatively connected to the one or more mask fabrication components such that at least one of data, information, and instruction is communicated to the fabrication components in order to effectuate an improvement in the EUV mask fabrication process.

10. (original) The system of claim 9, wherein the mask inspection system provides feedback to the control system related to one or more images patterned and developed on the layers to facilitate mask fabrication.

11. (original) The system of claim 9, wherein the mask inspection system provides feed-forward data related to data generated by the mask inspection system in order to control the EUV mask fabrication process for future EUV masks.

12. (Currently amended) The system of claim 9, wherein the mask inspection system comprises [a] an optical measurement system, the optical measurement system comprising a scatterometer having multiple gratings at fixed and variable pitches.

13. (original) The system of claim 9, wherein the one or more layers comprises chrome, titanium nitride, molybdenum, silicon, silicon nitride, and combinations thereof.

14. (original) The system of claim 9, wherein the generated data relates to any one of layer thickness, feature depth, feature height, feature width, feature placement, and pitch.

15. (original) A method for controlling an EUV mask fabrication process *in-situ* comprising:

providing a silicon substrate having one or more reflective material layers formed thereon;

forming a patterned photoresist layer over the one or more reflective material layers;

etching one or more features through one or more openings of the patterned photoresist layer into the one or more reflective material layers to form an EUV mask;

monitoring the etching of the one or more features via an optical measurement system;

generating data related to the one or more features being etched; and

relaying the generated data to an EUV mask fabrication control system in order to optimize the EUV mask fabrication process.

16. (original) The method of claim 15, further comprising feeding data corresponding to the features formed in the reflective material layers back to the mask fabrication process so as to effect an improvement in one or more mask fabrication components in order to optimize fabrication of the EUV mask.

17. (Currently amended) The method of claim 16, wherein the one or

more mask fabrication components correspond to at least one of layer formation, deposition rates, pressure, temperature, time, flow rates, and plasma type.

18. (original) The method of claim 15, further comprising feeding data corresponding to the features formed in the reflective material layers forward to optimize fabrication of future EUV masks.

19. (original) The method of claim 15, further comprising processing data generated via the measurement system into information usable and recognizable by the control system.

20. (original) The method of claim 15, wherein monitoring the etching of the one or more features comprises using the optical measurement system to measure one or more characteristics of the features to determine whether the EUV mask is being formed with the desired dimensions and accuracy.

21. (original) The method of claim 20, wherein one or more characteristics of the features comprises reflective material layer thickness, feature depth, feature height, feature width, feature placement, and pitch.

22. (original) The method of claim 15, wherein the optical measurement system comprises a scatterometer having multiple gratings at fixed and variable pitches.